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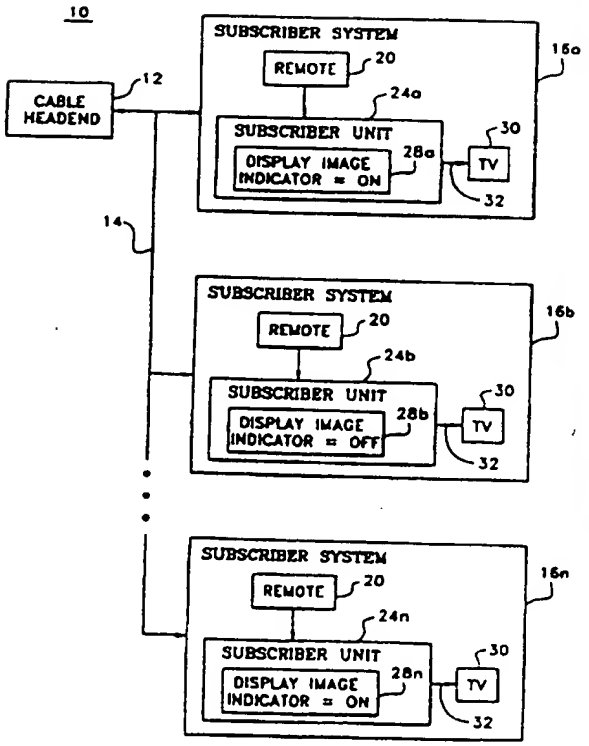
(54) Title: SYSTEM AND METHOD FOR APPLYING AN IMAGE TO A TELEVISION DISPLAY IN RESPONSE TO A USER CHANGE

(57) Abstract

A system and method is provided for displaying an image in a cable system including a cable headend (12) having a subscriber unit (24a) with a video display (30), a receiver for receiving the cable channels from the cable headend, a channel selector for selecting a cable channel and applying the selected cable channel to the video display (30) in order to display an image. Advertising information is transmitted to the subscriber unit. A first cable channel is selected and a first image is displayed in accordance with the first selected cable channel. A second cable channel is selected and a second image is displayed in accordance with the second selected cable channel. The transmitted advertising information is applied to the video display (30) in response to the determining to provide a display of an image representative of the advertising information during the time period of channel changes.



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SYSTEM AND METHOD FOR APPLYING AN IMAGE TO A TELEVISION DISPLAY IN RESPONSE TO A USER CHANGE

Background of the Invention

1. Field of the Invention

The invention relates to the field of cable television systems and, in particular, to transmitting advertising information from a cable headend to a subscriber unit of a cable television system and applying the transmitted advertising information to a television display in the subscriber unit.

2. Prior Art

In the prior art it is well known for large numbers of homes subscribing to cable television systems to receive a number of commercial and public television signals by way of transmission cables. Each television signal includes video and audio signals, which can be transmitted along a coaxial cable by a system headend within a discrete frequency band known as a channel. The subscriber tunes a television receiver to the desired channel and receives a composite television signal.

It is known to transmit information in addition to the television signals to the subscribers of prior art cable systems during blank field intervals of the video signals. For example, U.S. Patent No. 4,288,809, issued to Yabe, describes transmitting alphanumeric information during the blank field intervals. The alphanumeric information is stored in a temporary memory for display on a television within a subscriber unit. Yabe further describes an index that permits the viewer to determine by an overlay on the screen what

information is available. The index is contained on a RAM which can be updated by the blank field interval transmitted data.

U.S. Patent No. 4,161,728, issued to Insam, also discloses means for displaying information sent during field blanking of video information. The Insam patent describes a memory unit for storing information to be displayed, a display unit for synchronizing and producing addresses to memory containing the information to be displayed, a decoder unit, a control unit which is accessible through remote control, and a microprocessor which is responsive to programmed instruction.

U.S. Patent No. 4,052,719, issued to Hutt, also describes the transmission of auxiliary information during the field blanking intervals of video signal transmission. On the receiving end, a television receiver system has a RAM for collecting and storing the transmitted information, a selector, and a reading device. The viewer has the choice of viewing the video signal or the auxiliary information separately or together on the screen.

It is also known for stored advertising information to be displayed on televisions such as the television in cable television systems. For example, U.S. Patent No. 4,344,090, issued to Belisomi, discloses a picture display device using a ROM to store coded data corresponding to a television image in memory. The coded data represents advertising information that can be viewed upon demand and can be superimposed upon a received video signal or viewed as an alternative to the received video signal. Pococh, U.S. Patent No. 4,941,041, also teaches a system for selectively delivering television video for advertising.

U.S. Patent No. 5,233,423, issued to Jernigan, teaches a television receiver equipped with a graphics generator capable of generating single or multiple graphic images from data representing advertisements permanently stored

in a local memory device. Images corresponding to the advertisements are displayed when a control function of the receiver is activated.

However the advertising information of the above described systems cannot be updated because it is permanently stored in the local devices.

It is therefore an object of the present invention to provide a display of an advertising information image on a television in a subscriber unit of a cable television system.

It is a further object to provide such a display of an advertising information image that can be updated.

It is a further object of the invention to transmit the updated images to the subscriber unit of the cable television systems over the same transmission cable as the cable television signals.

These and other objects and advantages of the invention will become more fully apparent from the description and claims that follow or may be learned by the practice of the invention.

Summary of the Invention

A system and method is provided for displaying an image in a cable system including a cable headend having a plurality of cable channels and a subscriber unit with a video display, a receiver for receiving the cable channels from the cable headend, a channel selector for selecting a cable channel of the plurality of cable channels and applying the selected cable channel to the video display in order to display an image. Advertising information is transmitted to the subscriber unit. A first cable channel is selected and a first image is displayed in accordance with the first selected cable

channel. A second cable channel is selected and a second image is displayed in accordance with the second selected cable channel. A channel change is determined according to the selecting of the second channel. The transmitted advertising information is applied to the video display in response to the determination of the channel change to provide a display of an image representative of the advertising information.

Brief Description of the Drawings

In order that the manner in which the above-recited and other advantages and objects of the invention can be obtained, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. Understanding that these drawings depict only a typical embodiment of the invention and are not therefore to be considered limiting of its scope, the invention and the presently understood best mode thereof will be described and explained with additional specificity and detail through the use of the accompanying drawings.

Fig. 1 shows a block diagram representation of a cable system including a cable headend and a plurality of subscriber units according to the present invention;

Fig. 2 shows a flow chart representation of a method for applying an image to a television display in response to a channel change by a user in accordance with the present invention;

Fig. 3 shows a block diagram representation of a subscriber unit within the cable system of Fig. 1.

Detailed Description of the Invention

Referring now to Fig. 1, there is shown cable television system 10 according to the present invention. Cable television system 10 includes a cable headend 12 and a transmission cable 14. Cable headend 12 uses transmission cable 14 to apply television channels containing television signals to a number of cable subscriber systems 16a-n for display upon televisions 30 within cable subscriber systems 16a-n. The television signals applied to cable subscriber systems 16a-n by way of transmission cable 14 can be any conventional cable television signals well known to those skilled in the art.

Each cable subscriber system 16a-n of cable television system 10 includes a remote control device 20 for allowing a user of cable subscriber systems 16a-n to control televisions 30. Television 30 can be any conventional television or video display system capable of providing video output in response to signals on a transmission cable such as transmission cable 14. Remote control device 20 can be any conventional remote system for controlling television 30. For example, remote control device 20 can be an infrared control device or a mechanical control device.

Cable subscriber systems 16a-n of cable television system 10 also include respective subscriber units 24a-n. Subscriber units 24a-n receive the television channels from cable headend 12, and, under the control of remote control device 20, select a television channel from the received channels. The signals of the selected channel are applied to television 30. Subscriber units 24a-n of subscriber systems 16a-n can include any of the features of conventional cable system subscriber units well known to those skilled in the art.

Additionally, subscriber units 24a-n are provided with the ability to receive signals representative of advertising information for display of an advertising

information image on television 30 from cable headend 12 by way of transmission cable 14. The advertising information from cable headend 12 can be any information of any commercial value, such as a corporate logo, a trademark or a textual message. The advertising information can also be, for example, public service messages such as warnings against smoking, warnings against drinking while pregnant or reminders to immunize children. In the method of the present invention a subscriber unit such as subscriber unit 24a displays the advertising information image received from cable headend 12 on television 30 when a user of subscriber unit 24a changes channels using remote control device 20.

When a user of a conventional subscriber unit changes channels there is normally a brief delay period between the displays of sequentially displayed channels on the television of the conventional subscriber unit. The delay period can typically have a duration of approximately three hundred milliseconds to approximately five hundred milliseconds and is sometimes referred to as the interchannel interval (ICI). In the preferred embodiment of the present invention the advertising information image from the cable headend is displayed on television 30 during the ICI.

It is anticipated that users of subscriber units 16a-n will be offered a reduction in the cost of their cable service, a reduction in the cost of a utility such as their electric service or phone service or some other incentive for permitting advertising information images to be displayed on their televisions 30. However, not all users within cable television system 10 may be interested in displaying the advertising information images from cable headend 12. Thus, a method is provided for determining which subscriber units 24a-n within cable television system 10 should display the transmitted advertising information image.

In order to indicate whether an individual subscriber unit 24a-n should display the advertising information image a

display image indicator 28a-n is provided within each subscriber unit 24a-n. Thus, when a user changes channels using remote control device 20, subscriber units 24a-n check their respective display image indicators 28a-n. If a display image indicator 28a-n has the value ON, the subscriber unit 24a-n displays the advertising information image between displays of the sequentially displayed channels. If the display image indicator 28b has a value OFF, the display of the advertising information image is not provided.

For example, subscriber unit 24a displays the advertising information image from headend 12 because display image indicator 28a of subscriber unit 24a has the value ON. Subscriber unit 24b does not display the advertising information image because display image indicator 28b has the value OFF. Subscriber unit 24n also displays the advertising information image. In the preferred embodiment of the invention display image indicators 28a-n are stored in a location in a RAM. Storage of indicators 28a-n in a RAM permits the status of subscriber units 24a-n to be easily changed by, for example, cable headend 12 by writing over the previous status.

Referring now to Fig. 2, there is shown a flow chart representation of advertising image display method 80. Advertising image display method 80 is executed within subscriber units 24a-n for selectively applying an advertising information image to television 30 in response to a channel change by users of subscriber systems 16a-n of cable television system 10. Advertising image display method 80 can be included in a method, shown only in relevant portion, for servicing a number of different control signals from remote control device 20 provided in response to user commands as the user controls the display of television 30.

When a control signal is received from remote control device 20, as shown in block 82, a series of decisions is provided in order to determine what type of change is commanded

by the user. For example, a determination can be made whether the received control signal represents a volume change command as shown in decision 80. If the signal represents a volume change command execution of image display method 80 proceeds to volume control routine 88.

In volume control routine 88 the volume of television 30 is raised or lowered in response to the volume command from remote control device 20 in a manner well understood by those skilled in the art. After execution of volume control routine 88, execution of image display method 80 proceeds by way of path 102 to block 82. Image display method 80 waits at block 82 for another signal from remote control device 20.

If the control signal received from remote control device 20 is not a volume change command, as determined in decision 86, execution of image display method 80 proceeds to decision 90. In decision 90 a determination is made whether the received control signal from remote control device 20 is representative of a channel change command from the user. If the signal is a channel change command a determination is made in decision 94 whether subscriber unit 24a-n executing image display method 80 displays advertising information images. This determination is made by reference to display image indicators 28a-n within subscriber units 24a-n.

If subscriber unit 24a-n performing the execution of image display method 80 is not set to display advertising information images, as indicated by display image indicator 28a-n, execution proceeds by way of path 106 to channel control routine 98. Channel control routine 98 can be any conventional channel control routine suitable for changing channels in response to a command from a user operated remote control device 20. After completion of channel control routine 98, execution of image display method 80 proceeds by way of path 102 to block 82.

In the preferred embodiment of advertising image display method 80, subsequent displays of an advertising information image can be inhibited for a predetermined period of time after a first display. The predetermined period of time during which further displays are inhibited is the interdisplay time interval. Thus, for example, a user can change channels and receive a display of the advertising information image as previously described. If the user changes channels again, before expiration of the interdisplay time interval, the image is not displayed again. If the user changes channels again, after expiration of the interdisplay time interval, the advertising information image is again displayed. In this manner, users rapidly changing channels do not have to view the advertising information image each time a channel is changed.

The interdisplay time interval can be any period of time selected and programmed into image display method 80. In the preferred embodiment of the invention it is believed that a suitable period for the interdisplay time interval can be between approximately thirty seconds and approximately fifty seconds, with an interval of approximately forty seconds being the most preferred. In practice, however, it is believed that market considerations will determine the duration of the interdisplay time interval.

In order to provide the interdisplay time interval feature, a determination can be made in decision 110 whether the interdisplay time interval has expired when a channel change signal is determined in decision 90. If the interdisplay time interval has not expired, as determined in decision 110, it is not yet time to provide another display of the advertising information image, and execution of image display method 80 proceeds by way of path 106 to channel control routine 98.

If the interdisplay time interval has expired, as determined in decision 110, the advertising information image

is displayed as shown in block 114. An interdisplay timer is set as shown in block 118 in order to prevent further displays of the advertising information image for the duration of the interdisplay time interval.

The duration of the display of the advertising information image according to image display method 80 can be any period of time consistent with the relevant legal and rechnical constraints. For example, since subliminal messages are not permitted under FCC regulations, the duration of the display of the advertising information image should be in excess of at least fifty milliseconds, a commonly accepted limit for subliminal messages. Since users of cable subscriber systems 16a-n are accustomed to interchannel intervals in the range of one hundred to three hundred and fifty milliseconds on each occasion of a channel change, the duration of the display of the advertising information image is preferably selected to fit within this range. The duration selected is programmed into subscriber units 24a-n and implemented by image display method 80 as previously described.

Advertising image display method 80 can also determine whether any other function has been commanded by remote control device 20 prior to the return of execution to block 82. A command for a further function can be determined by a decision such as decision 122 and a corresponding control routine can be performed as shown in block 126. These determinations can be made according to methods well understood by those skilled in the art.

Referring now to Fig. 3, there is shown a block diagram representation of subscriber unit 24a of cable subscriber system 16a within cable television system 10. Within subscriber unit 24a television signals are received from cable headend 12 by way of transmission cable 14. The received television signals are applied to television 30 by way of line 32. The remaining subscriber units 24b-n of cable television

system 10 can be provided in a manner similar to that described for subscriber unit 24a or in any other manner.

Subscriber unit 24a includes microprocessor 60 suitable for controlling the operations of subscriber unit 24a, including execution of image display method 80 according to the method of the present invention. When a user operates remote control device 20 to send a command signal to subscriber unit 24a, the command signal is received by remote control receiver 48 of subscriber unit 24a and applied to microprocessor 60. Microprocessor 60 performs operations upon the control signal according to a control program stored in ROM 40 which is accessed by way of bidirectional bus 52.

Tuner 72 of subscriber unit 24a can be a conventional cable tuner for receiving and selecting channels of the plurality of channels transmitted along transmission cable 14 by cable headend 12. Tuner 72 thus operates as a channel selector within subscriber unit 24a and can therefore be realized by any device capable of selecting transmitted channels. Under the control of microprocessor 60 tuner 72 applies the signal of a selected channel to switch 76 by way of tuner line 74. The signals applied to switch 76 from tuner 72 can be applied to radio frequency modulator 78 under the control of microprocessor 60. From radio frequency modulator 78 the signals are applied to television 30 for display. Microprocessor 60 controls switch 76 by way of switch control line 62.

The advertising information image transmitted from cable headend 12 preferably resides in RAM 44 of subscriber unit 24a. It is stored in RAM 44 by microprocessor 60 according to program instructions residing in ROM 40 by way of bus 56 when it is received from cable headend 12 by way of tuner 72. Any method of transmitting information by way of transmission cable 14 through tuner 72 for storage in RAM 44 can be used.

The advertising information image can be transmitted over transmission cable 14 in the bandwidth of a dedicated advertising information channel. The advertising information image can also be transmitted in unused bandwidth between channels wherein the unused bandwidth can be dedicated to transmission of the advertising information image. For example, the conventionally unused bandwidth between channels four and five can be available and can therefore be dedicated to carrying advertising information images. If dedicated bandwidth is used in this manner, tuner 72 can be adapted to always select the dedicated bandwidth and transmit the advertising information to microprocessor 60 as it arrives. Additionally, the advertising information image can be transmitted in unused time intervals within channels carrying program material.

The signals representative of the advertising information image transmitted from cable headend 12 can be analog or digital signals, although digital signals are preferred. Signals representing any number of different advertising information images for transmission to subscriber systems 16a-n can be stored at cable headend 12 on optical disks or magnetic tape or any other information storage medium. They can be stored in a digital format or in an analog format for reproduction by an optical disk player, a video cassette player or another reproduction device prior to being applied to cable 14 for transmission to subscriber systems 16a-n.

Display image indicator 28a can be stored within RAM 44 of subscriber unit 24a. When microprocessor 60 receives a channel change command from remote control device 20, as determined by decision 90 of image display method 80, microprocessor 60 accesses display image indicator 28a from RAM 44 to determine whether an advertising information image is to be displayed. If the advertising information image is to be displayed the signals representative of the image are applied from RAM 44 to graphics generator 68 by way of bus 66 to be formatted for display on television. Although the signals

representative of the image are preferably stored in RAM 44 in this manner for later display, the signals can be immediately displayed when they are received by tuner 72 in an alternate embodiment of the invention.

Under the control of microprocessor 60, by way of graphics control line 64, the formatted image in graphics generator 68 is applied to switch 76 by way of generator line 70. Thus the signal on graphics control line 64 is an example of a signal provided in response to a channel change command from remote control device 20. Under the control of microprocessor 60 switch 76 can then apply the advertising information image received from graphics generator 68 to radio frequency modulator 78 for display on television 30.

According to the method of the invention switch 76 can select either the image applied by tuner 72 by way of tuner line 74 or the image applied by graphics generator 68 by way of generator line 70 under the control of microprocessor 60 executing control method 80. The selected image is applied by switch 76 to radio frequency modulator 78 for display on television 30.

When an advertising information image is applied to television 30 by way of switch 76, it can be formatted by graphics generator 68 and displayed in any manner. For example, a full screen display can be provided on television 30. Additionally, partial screen displays such as quadrants and windows can be provided. More than one advertising information image from the same advertiser or images for more than one advertiser can be provided during the same display. Furthermore, static or dynamic displays can be provided. In dynamic displays, for example, the image can be moved or sequential images can be provided. The advertising information image or images received from cable headend 12 and stored in RAM 44 or immediately displayed can also be combined with a library of additional images that can be stored in ROM 40 or RAM 44.

The transmission of advertising information images from cable headend 12 can include header fields. The header fields can be provided before and after the advertising information to indicate the beginning and end of the advertising information received by subscriber units 24a-n. They can also contain any other information relating to the advertising information image.

For example, the header information associated with an image can include the duration and frequency of display of the image as well as identification information. The identification information can include telephone, address, internet address, web page address, facsimile or telex information associated with an advertiser. The identification information can be stored for the most recently displayed images in order to permit later access by the user. For example, the identification information can be stored in a first-in, first-out stack in RAM 44 for access by means of remote control device 20 with a personal computer or by means of computer access line 50. Additionally, the identification information can be stored at cable headend 12, at a predetermined internet address or by a company providing the optical disk or magnetic tape containing the advertising information to the cable headend 12 for later access by the user.

The images provided by way of transmission cable 16 can be a constant stream of changing images having any duration. For example, an image representative of a first advertiser can be transmitted for a period of thirty seconds and an image for a different advertiser can then be transmitted for the next thirty second period. Alternately, each of the images can be transmitted at the beginning of its period, stored for the duration of the period and written over by the next image at the beginning of the next period. In these embodiments, the user views whichever image is current when the channel is changed.

In these embodiments some advertising information images may not be viewed by a user because the user may not change channels while the images are current. Thus a priority status can be assigned to an image in order to instruct microprocessor 60 to save the priority image and display it when the next channel change occurs, regardless of how many other advertising information images are transmitted in the meantime. Priority status of an image can be indicated in the header field of the image. It is anticipated that an advertiser will pay a premium for receiving priority status.

In addition to receiving a constant stream of changing images and displaying a current image, the method of the present invention can receive and store a number of images in RAM 44 for access and display at a later time. The number of images that can be stored for later display is limited only by the amount of storage space.

The advertising information transmitted by cable headend 12 to cable subscriber systems 16a-n can be scheduled at the cable headend according to date and according to time of day. The scheduling can be determined according to agreements made with advertisers providing the advertising information images.

In the preferred embodiment of the invention, an advertising image is received by subscriber units 24a-n from the cable headend 12 by way of transmission cable 14 as previously described and applied to television 30. However, it will be understood that audio information associated with the advertising information image can also be received by way of transmission cable 14 and applied to television 30 when a channel change command is received. The audio information associated with the image information can be stored in RAM 44 along with the video image information. If audio advertising information is provided for generation of an audible message associated with the advertising information image any method of

transmitting the audio can be used. Additionally, an aroma generating device or any other device useful to an advertiser can also be activated in response to a channel change within cable television system 10.

Furthermore, it will be understood that transmission cable 14 can be a coaxial cable, a fiber optic cable, a microwave link, a broadcast link, a satellite link, or any other transmission medium for transmitting television signals. Cable television system 10 can be any type of television transmission system including any such transmission medium. Cable subscriber systems 16a-n can include subscriber units 24a-n in a housing separate from television 30, within television 30 or in any other configuration.

It will be appreciated by those skilled in the art that changes may be made to the embodiments described above without departing from the broad inventive concept thereof. It is understood therefore, that this invention is not limited to the embodiments disclosed, but it is intended to cover modifications within the spirit and scope of the present invention as defined by the appended claims.

Claims

1. A method for displaying an image in a cable system including a cable headend having a plurality of cable channels, a subscriber unit having a video display, a channel selector for selecting a cable channel of said plurality of cable channels and applying said selected cable channel to said video display in order to display an image, comprising the steps of:

(a) transmitting advertising information to said subscriber unit;

(b) first selecting a first cable channel for displaying a first image in accordance with said first selected cable channel;

(c) second selecting a second cable channel for displaying a second image in accordance with said second selected cable channel;

(d) determining a channel change in response to said second selecting; and

(e) applying said transmitted advertising information to said video display in response to said determining to provide a display of an image representative of said advertising information.

2. The method for displaying an image according to Claim 1, wherein a plurality of channel changes is provided further comprising the step of determining a time period between channel changes of said plurality of channel changes.

3. The method for displaying an image according to Claim 2, further comprising the step of applying said transmitted advertising information to said video display in accordance with said determined time period between channel changes.

4. The method for displaying an image according to Claim 3, further comprising the step of applying said transmitted advertising information to said video display when said determined time period is greater than a predetermined amount of time.

5. The method for displaying an image according to Claim 4, wherein said predetermined amount of time comprises between about thirty seconds and about fifty seconds.

6. The method for displaying an image according to Claim 1, further comprising the step of determining a subscriber unit status of said subscriber unit and applying said advertising information to said video display in accordance with said determined subscriber unit status.

7. The method for displaying an image according to Claim 1, further comprising the step of determining a time of day and transmitting said advertising information in accordance with said determined time of day.

8. The method for displaying an image according to Claim 1, further comprising the step of determining a date and transmitting said advertising information in accordance with said determined date.

9. The method for displaying an image according to Claim 1, further comprising the step of storing said transmitted advertising information in said subscriber unit.

10. The method for displaying an image according to Claim 1, further comprising the steps of:

(f) transmitting further advertising information to said subscriber unit; and

(g) storing said further transmitted advertising information in said subscriber unit.

11. The method for displaying an image according to Claim 10, further comprising the step of displaying an image representative of said further advertising information on said video display in response to determining a further channel change.

12. The method for displaying an image according to Claim 1, wherein a channel change interval is provided between said display of said first image and said display of said second image.

13. The method for displaying an image according to Claim 12, wherein said image representative of said advertising information is displayed during said channel change interval.

14. The method for displaying an image according to Claim 1, wherein said image representative of said advertising information is displayed for a period of time between about one hundred milliseconds and about three hundred and fifty milliseconds.

15. The method for displaying an image according to Claim 1, wherein said advertising information is transmitted by way of a cable.

16. The method for displaying an image according to Claim 1, wherein said advertising information includes audio information and an audible signal is provided in response to said determining of said channel change.

17. The method for displaying an image according to Claim 1, wherein said channel change is provided in accordance with a remote control device.

18. The method for displaying an image according to Claim 17, wherein said remote control device comprises an infrared device.

19. The method for displaying an image according to Claim 1, wherein said advertising information is transmitted by said cable headend.

20. The method for displaying an image according to Claim 1, wherein said advertising information comprises signals representative of a plurality of images and said plurality of images is displayed in response to said determining of said channel change.

21. The method for displaying an image according to Claim 1, wherein said advertising information includes image information and corresponding identification information, further comprising the steps of:

(h) storing said identification information;

(i) terminating said display of said image; and

(j) providing a user of said cable system with access to said stored identification information after said terminating.

22. A system for displaying an image in a cable system including a cable headend having a plurality of cable channels, a subscriber unit having a video display, a channel selector for receiving and selecting a cable channel of said plurality of cable channels and applying said selected cable channel to said video display in order to display an image, comprising:

advertising information transmitted to said subscriber unit;

a first display of a first image of a first received cable channel;

a second display of a second image of a second received cable channel;

said select channel selector being adapted to change channels by terminating said first display and beginning said second display; and

means for applying said transmitted advertising information to said video display in response to said change of channels in order to provide a display of an image representative of said advertising information.

23. The system for displaying an image according to Claim 21, further comprising means for applying said transmitted advertising information to said video display only when a predetermined amount of time has elapsed since a previous channel change

24. The system for displaying an image according to Claim 22, further comprising a subscriber unit status indicator wherein said advertising information is applied to said video display in accordance with said subscriber unit status.

25. The system for displaying an image according to Claim 22, comprising further advertising information transmitted to said subscriber unit and stored in said subscriber unit for displaying an image representative of said further advertising information in response to a further channel change.

26. The system for displaying an image according to Claim 22, wherein a channel change interval is provided between said display of said first image and said display of said second image.

27. The system for displaying an image according to Claim 26, wherein said image representative of said advertising information is displayed during said channel change interval.

28. The system for displaying an image according to Claim 22, wherein said image representative of said advertising information is displayed for a period of time between about one hundred milliseconds and about three hundred and fifty milliseconds.

29. The system for displaying an image according to Claim 22, wherein said advertising information includes audio information and an audible signal is provided in response to said determining of said channel change.

30. The system for displaying an image according to Claim 22, wherein said advertising information is transmitted by said cable headend.

31. A method for displaying an image in a cable system including a cable headend and a subscriber unit having a video display and a user, comprising the steps of:

(a) transmitting advertising information to said subscriber unit, said advertising information including image information and identification information corresponding to said image information;

(b) storing said identification information;

(c) applying said image information to said video display in order to provide a display of an image representative of said advertisement information;

(d) terminating said display of said image; and

(e) providing said user with access to said stored identification information after said terminating.

32. The method for displaying an image according to Claim 31, further comprising the steps of:

(f) first selecting a first cable channel for displaying a first image in accordance with said first selected channel;

(g) second selecting a second cable channel for displaying a second image in accordance with said second selected channel;

(h) determining a channel change in response to said second selecting; and

(i) performing said applying of said image information in response to said determining of said channel change.

33. The method for displaying an image according to Claim 31, wherein a plurality of channel changes is provided further comprising the steps of determining a time period between channel changes of said plurality of channel changes and applying said image information in accordance with said determined time period.

34. The method for displaying an image according to Claim 33, further comprising the step of determining a subscriber unit status of said subscriber unit and applying said image information in accordance with said determined subscriber unit status.

35. The method for displaying an image according to Claim 31, further comprising the steps of:

(j) transmitting further advertisement information to said subscriber unit; and

(k) storing said further transmitted advertisement information in said subscriber unit.

36. The method for displaying an image according to Claim 35, further comprising the step of displaying an image representative of said further advertisement information in response to determining a further channel change.

37. The method for displaying an image according to Claim 32, further comprising a channel change interval between said displaying of said first image and said displaying of said second image wherein said image advertisement information is applied during said channel change interval.

38. The method for displaying an image according to Claim 31, wherein said advertising information includes audio information and an audible signal is provided in accordance with said audio information when said image information is applied to said video display.

39. The method for displaying an image according to Claim 31, wherein said advertising information is transmitted by way of a cable.

40. The method for displaying an image according to Claim 31, wherein said advertising information is transmitted by said headend.

41. The method for displaying an image according to Claim 40, wherein said image information is applied to said video display for a period of time between about one hundred milliseconds and three hundred and fifty milliseconds.

42. A system for displaying an image in a cable system including a cable headend and a subscriber unit, comprising:

advertising information transmitted to said subscriber unit, said advertising information including image information and identification information corresponding to said image information;

memory for storing said identification information;

a display device for providing a temporary display of an image representative of said image information; and

means for accessing said stored identification information after said temporary display.

43. The system for displaying an image according to Claim 42, further comprising;

a first display of signals transmitted on a first channel;

a second display of signals transmitted on a second channel;

means for selecting said first and second displays; and

means for providing a channel change signal in response to said selecting.

44. The system for displaying an image according to Claim 43, wherein said temporary display is provided in response to said channel change signal.

45. The system for displaying an image according to Claim 43, wherein a plurality of channel changes is provided further comprising a time period between channel changes of said plurality of channel changes for providing said temporary display in accordance with said time period.

46. The system for displaying an image according to Claim 42, further comprising a subscriber unit status for applying said advertisement information in accordance with said subscriber unit status.

47. The system for displaying an image according to Claim 42, further comprising;

further advertisement information transmitted to said subscriber unit; and

means for storing said further transmitted advertisement information within said subscriber unit.

48. The system for displaying an image according to Claim 47, further comprising a display of an image representative of said further advertisement information in response to a channel change signal.

49. The system for displaying an image according to Claim 42, further comprising a channel change interval between said first display and said second display wherein said image representative of said image information is displayed during said channel change interval.

50. The system for displaying an image according to Claim 42, wherein said memory is located in said subscriber unit.

51. The system for displaying an image according to Claim 42, wherein said advertising information is transmitted by said cable headend.

52. The system for displaying an image according to Claim 42, wherein said advertising information includes audio information and an audible signal is provided in accordance with said audio information when said temporary display is provided.

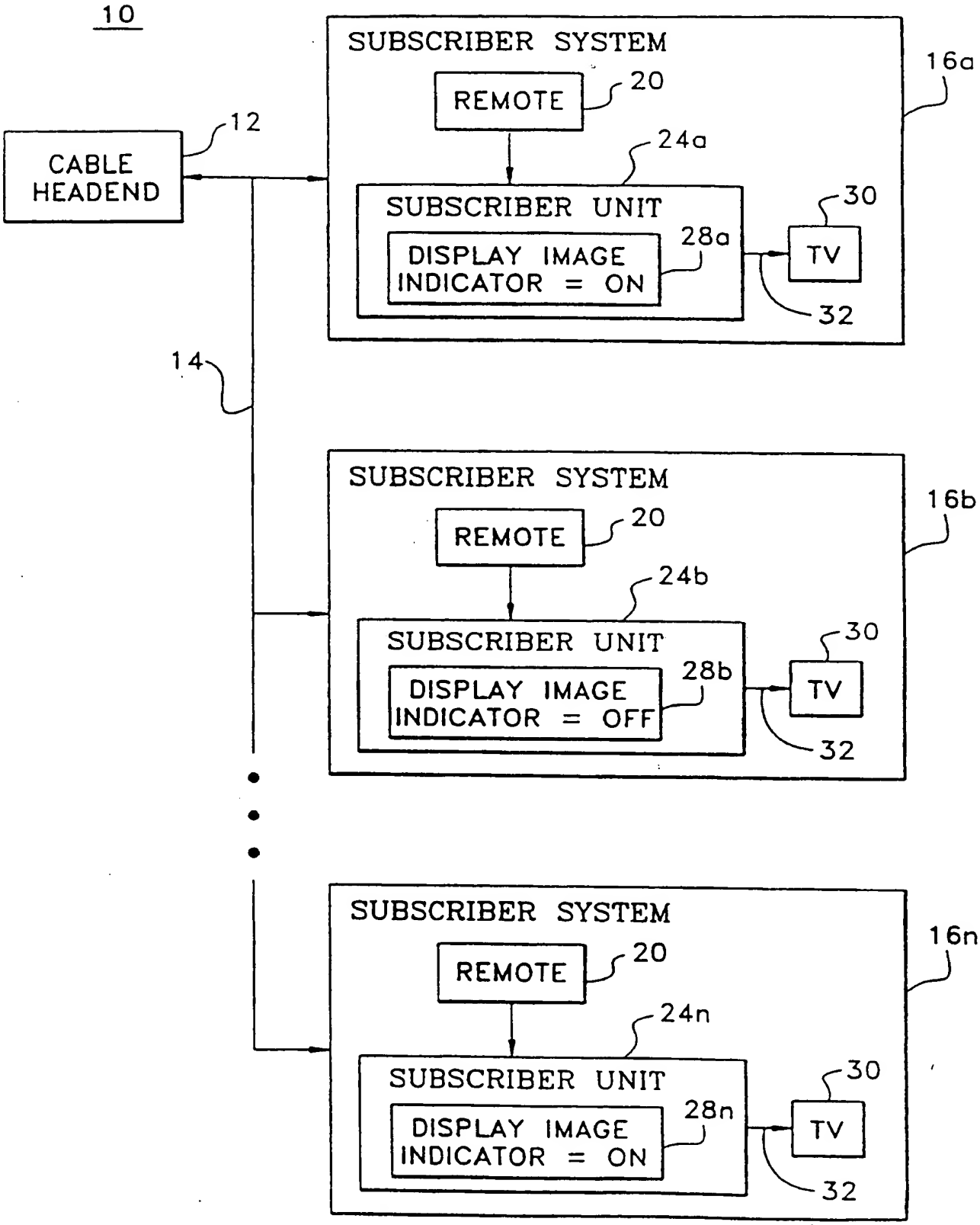
10
SUBSCRIBER SYSTEM
16a
REMOTE
20
12
CABLE HEADEND
24a
SUBSCRIBER UNIT
30
DISPLAY IMAGE INDICATOR = ON
28a
TV
32
14
SUBSCRIBER SYSTEM
16b
REMOTE
20
24b
SUBSCRIBER UNIT
30
DISPLAY IMAGE INDICATOR = OFF
28b
TV
32
SUBSCRIBER SYSTEM
16n
REMOTE
20
24n
SUBSCRIBER UNIT
30
DISPLAY IMAGE INDICATOR = ON
28n
TV
32

FIG. 1

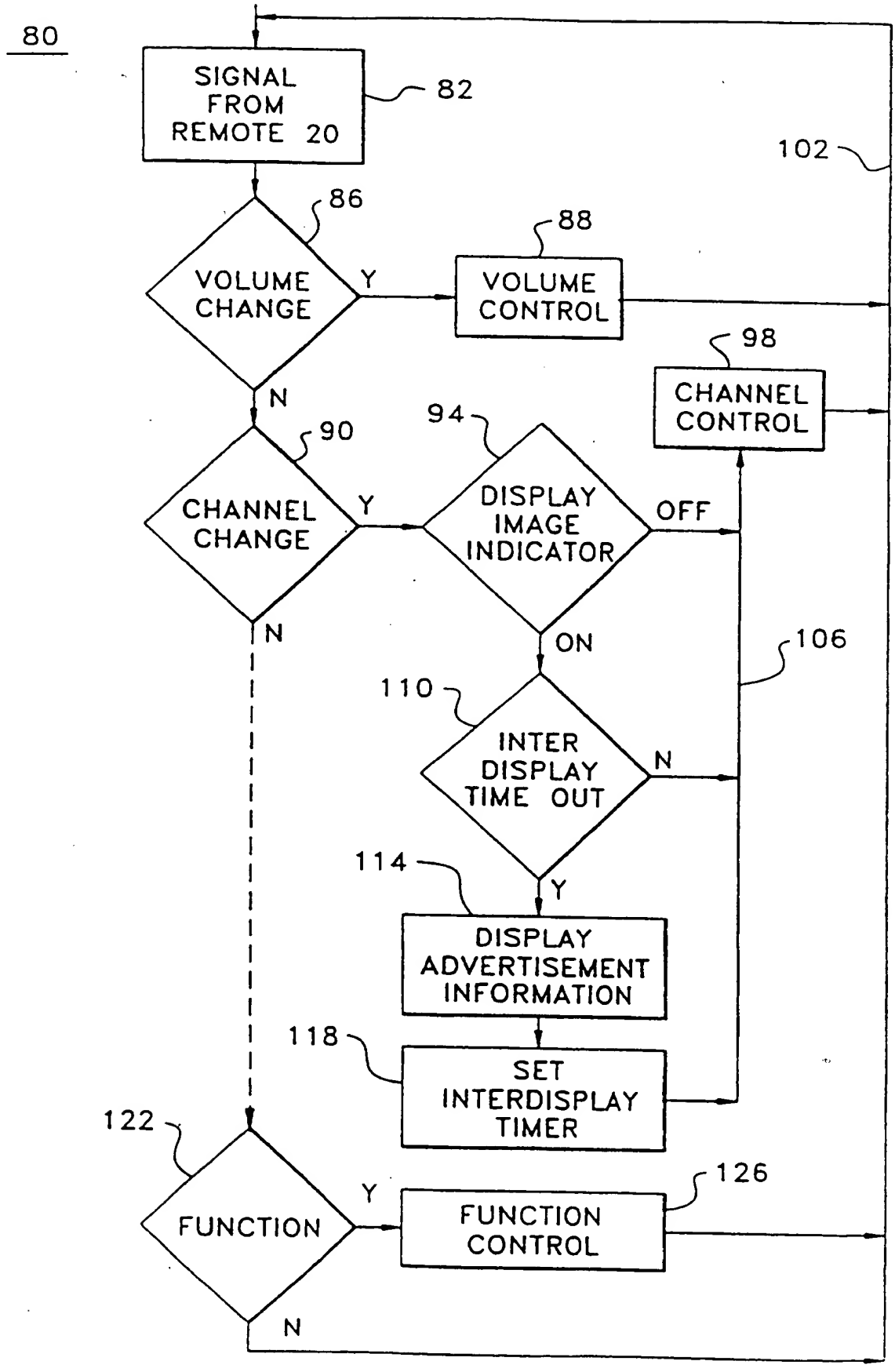
80
SIGNAL FROM REMOTE 20
82
102
86
VOLUME CHANGE
Y
88
VOLUME CONTROL
98
CHANNEL CONTROL
N
90
CHANNEL CHANGE
Y
94
DISPLAY IMAGE INDICATOR
OFF
N
ON
106
110
INTER DISPLAY TIME OUT
N
114
Y
DISPLAY ADVERTISEMENT INFORMATION
118
SET INTERDISPLAY TIMER
122
FUNCTION
Y
126
FUNCTION CONTROL
N

FIG. 2

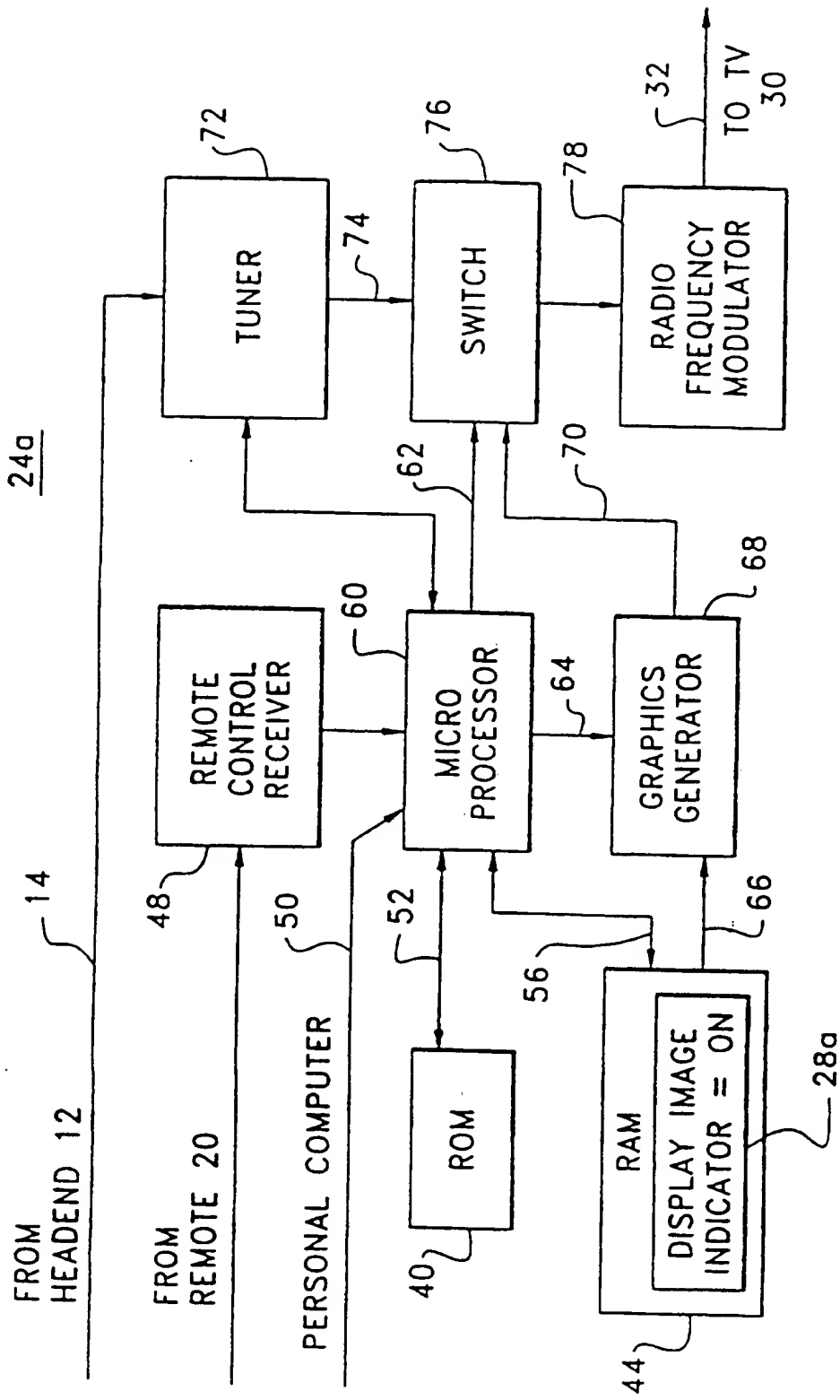
24a
FROM HEADEND 12
14
FROM REMOTE 20
PERSONAL COMPUTER
TUNER
72
74
SWITCH
76
78
RADIO FREQUENCY MODULATOR
32
TO TV 30
REMOTE CONTROL RECEIVER
48
60
MICRO PROCESSOR
62
64
70
GRAPHICS GENERATOR
68
50
52
56
66
ROM
40
RAM
DISPLAY IMAGE INDICATOR = ON
28a
44

FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/05027

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :H04N 7/10, 7/14
US CL :348/10, 6, 7, 10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 348/10, 6, 7, 10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS - cable, advertisements, commercials, infomercials, channel change, headend

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, 5,233,423 (JERNIGAN ET AL) 03 August 1993, col. 1 lines 29-68, col 2. lines 1-21, col 3. lines 1-18	1-52
Y	US, A, 5,099,319 (ESCH ET AL) 24 March 1992, col 1. lines 34-61, col 3. lines 54-64	1,7,8,22,31,42

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be part of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 09 JUNE 1997	Date of mailing of the international search report 0 3 JUL 1997
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Form PCT/ISA/210 (second sheet)(July 1992)*